CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 91 - 149

WASTE DISCHARGE REQUIREMENTS FOR:

CHEVRON CHEMICAL COMPANY
CLASS II SOLID WASTE DISPOSAL SITE
SOIL MANAGEMENT UNIT I
RICHMOND, CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

1. Chevron Chemical Company, hereinafter called the Discharger, is a wholly owned subsidiary of Chevron Corporation. The Discharger submitted a Report of Waste Discharge (ROWD) in January 1991 for a proposed Class II landfill, called Soil Management Unit I. The ROWD was submitted as an application for Waste Discharge Requirements for construction of the Class II waste management unit in compliance with California Code of Regulations, Title 23, Division 3, Chapter 15.

2. The site is located (Figure 1) in north Richmond, approximately 900 feet north of the facility main gate entrance on Castro Street and approximately 2000 feet northwest of Chevron Chemical Company's offices at 940 Hensley Street. The Assessor's Parcel Number is 561-120-015.

3. The proposed unit (Figure 2) occupies 3.8 acres of the Discharger's 140 acre Plant Site and Evaporation Pond areas. It is located in Section 11, Township 1 North, Range 5 West. The proposed unit is approximately 750 feet long and 200 feet wide at the top of slope, with a potential storage volume of 56,000 yd^3.

4. The site of the proposed unit was formerly the site of a pond (named the "Borrow Pond") located at the Discharger's Fertilizer Division. The pond had been utilized for temporary storage of fertilizer product generated at the plant. Since the pond's decommissioning this year, the solids contained within the pond have been removed, with the pond used only for stormwater containment.

5. The facility's stormwater control system is regulated under NPDES Permit No. CA0005134 established under Board Order 87-073.

6. The Discharger proposes to discharge non-hazardous, contaminated soils generated by ongoing construction, maintenance, and environmental cleanup activities into the proposed unit. The wastes will be primarily those from the Discharger's facility with some others generated at Chevron U.S.A.'s Richmond

Refinery. These soils are classified as "designated waste" as defined in Section 2522 of Chapter 15.

7. The landfill will be in operation for about 5 years. Over 55% of the wastes to be contained within the landfill are expected to be soil spoils, contaminated to designated levels, generated by construction activities for the Discharger's slurry wall and groundwater extraction trench system (Figure 3).

8. The wastes originating from the Chevron Chemical Company facilities consists of fill and native soils contaminated with various levels of pesticides, fertilizers, halogenated organics, and heavy metals.

9. The wastes originating from the Chevron U.S.A. facilities consist of fill and native soils contaminated with petroleum hydrocarbons and various heavy metals.

10. The landfill will be designed, as specified in the ROWD and this Order, to assure that groundwater does not come in contact with the waste by utilizing: 1) the naturally occurring low permeability clayey foundation ($\leq 10^{-6}$ cm/sec), 2) an overlying Leachate Collection and Recovery System, and 3) the surrounding slurry wall and groundwater extraction trench system (Figure 3) designed for overall cleanup and remediation activities of the Evaporation Pond System, presently regulated under the TPCA and RCRA programs.

11. The proposed landfill design satisfactorily meets Chapter 15 requirements for an alternative engineering design. Existing conditions are such that there is no 5 foot separation between the bottom of the proposed unit and groundwater. The proposed engineering alternative, however, will ensure the 5 foot separation by the utilization of an encircling slurry wall and extraction trench system (Figure 3) and by the unit's Leachate Collection and Recovery System so that groundwater levels will be lowered and the isolation of the wastes ensured.

12. The soils and groundwater immediately adjacent to and underlying the proposed waste management unit, have been contaminated from earlier operations at the Evaporation Ponds and, to a certain extent, by constituents from Fertilizer operations. The proposed site remediation effort, of which the slurry wall and extraction system are major components, focuses on isolation of the contaminated soils and the removal of the contaminated groundwater to a treatment plant for later discharge to the Richmond POTW.

13. Chevron Chemical Company's facility straddles both low lying tidal flats and an alluvial plain. The facility lies near the western edge of the northwest trending Richmond Basin, bounded in the west by the Potrero-San Pablo Ridge and in the east by the Berkeley Hills. The basin, overlain by Bay Mud and marsh deposits, is filled with a 100 to 300 foot thick sequence of interfingering alluvial fan and estuarine deposits of Pleistocene age which, in turn, overlie

Franciscan bedrock. The alluvial deposits consist of clay with layers of silt, sand, and gravel. The estuarine deposits consist primarily of silts and clays.

14. The site has been identified as having six water bearing zones, designated as the "A", "C", "B", "D", "E", and "F" with increasing depth. The two upper water bearing zones, the "A" and "C" are brackish and exceed primary and secondary drinking water standards for total dissolved solids, specific conductance, pH, sodium, chloride, sulfate, manganese, and nitrate. The "A" Zone within the vicinity of the Evaporation Ponds and the proposed waste management unit has been locally impacted by waste constituents within the soils of the facility, such as arsenic, nitrates, ammonia, and some solvents, such as dichloroethane, dichloroethene, tetrachlororoethene, trichloroethane and some Benzene, Toluene, and Xylene. The "A" Zone is separated from the underlying "C" Zone by a thick sequence of Bay Mud.

    The "B" Zone, occurring at an approximate depth of 110 feet, consists of alluvial sands and gravels. Although fresh, the water exceeds secondary drinking water standards for total dissolved solids, specific conductance, sodium, chloride, and manganese. The potential for saltwater intrusion from San Pablo Bay seriously limits this water for drinking water or agricultural use. This zone underlies a 20 to 40 foot thickness of estuarine clays below the "C" Zone. An upward gradient exists between this and the overlying "A" and "C" water bearing zones.

    The "D" Zone, occurring at a depth of about 180 feet below the ground surface, also consists of alluvial sands and gravels. This zone is separated from the overlying "B" Zone by an intervening clay layer of greater than 15 feet thickness. In respect to overlying water bearing units, an upward gradient exists. Although the aquifer has fresh water as does the "B" Zone, iron and manganese concentrations exceed secondary drinking water standards.

    The underlying "E" and "F" Zones, lying at depths in excess of 200 feet and overlying Franciscan bedrock, have been identified by early exploratory borings and electric logs. No additional investigation has been performed for these units.

15. Earthquakes posing a threat to the landfill could occur along the Hayward and San Andreas faults. The maximum surface acceleration - calculated for soft to medium clay and sand sites - is expected to range from 0.29g for an event originating from a Richter Magnitude 6.7 Maximum Credible Earthquake (MCE) at the Hayward Fault about 3.7 km east of the site to 0.21g from a Richter Magnitude 7.8 MCE from the San Andreas Fault located about 24 km west.

16. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin on December 17, 1986. The Basin Plan contains water quality objectives and beneficial uses for San Francisco Bay and contiguous surface and ground water. This Order implements the water quality objectives for San

Pablo Bay as stated in the Basin Plan.

17. The beneficial uses of the surface waters in the vicinity of the site, which include Wildcat Creek, Castro Creek and San Pablo Bay, are:

    a. Industrial Service Supply
    b. Navigation
    c. Water Contact Recreation
    d. Non-contact Water recreation
    e. Ocean Commercial and Sport Fishing
    f. Wildlife Habitat
    g. Preservation of Rare and Endangered Species
    h. Fish Migration
    i. Fish Spawning
    j. Shellfish Harvesting
    k. Estuarine Habitat
    l. Warm Fresh Water Habitat

18. The existing and potential beneficial uses of ground waters near the Discharger's property include:

    a. Limited Domestic Supply
    b. Limited Agricultural Supply
    c. Industrial Supply

19. This action is exempt from the provisions of the California Environmental Quality Act pursuant to Section 15308, Title 14 of the California Code of Regulations.

20. The Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

21. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that Chevron Chemical Company and any other persons that currently or in the future own this land or operate this facility, shall meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder and shall also comply with the following:

A. PROHIBITIONS

    1. The discharge of "hazardous waste" at this facility is prohibited. For the purposes of this Order, the term "hazardous waste" is as defined in

Chapter 15.

2. The discharge of liquid or semi-solid waste to the landfill unit is prohibited.

3. The discharge of wastes which have the potential to reduce or impair the integrity of the containment structures or which, if commingled with other wastes in the unit, which could produce chemical reactions that create heat or pressure, fire or explosion, toxic by-products, or reaction products which in turn:

    - o require a higher level of containment than provided by the unit,
    - o are "restricted hazardous wastes", or
    - o impair the integrity of the containment structures,

    is prohibited.

4. Wastes shall not be placed in or allowed to contact ponded water from any source whatsoever.

5. Wastes shall not be disposed of in any way where they can be carried from the disposal site and discharged into waters of the State or of the United States.

6. The Discharger, or any future owner or operator of this site, shall not cause the following conditions to exist in waters of the State at any place outside the waste management facility:

    a. Surface Waters

    Floating, suspended, or deposited macroscopic particulate matter or foam.

    Bottom deposits or aquatic growth.

    Adversely alter turbidity, apparent color, or water levels beyond natural background levels.

    Visible, floating, suspended or deposited oil or other products of petroleum origin.

    Toxic or other deleterious substances in concentrations or quantities which may cause deleterious effects on aquatic biota,

wildlife or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentrations.

b. Groundwater

Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

7. Leachate generated from the wastes and any ponded water or extracted groundwater containing leachate or in contact with the wastes shall not be discharged outside of the barrier wall/extraction trench area to waters of the State or the United States.

8. Surface water collected from within the limits of the waste disposal area shall not be discharged to waters of the State except as permitted by the NPDES Permit described in the Findings.

9. Any future uses of the landfill area that would jeopardize the integrity of the landfill cover is prohibited.

B. SPECIFICATIONS

1. During waste disposal, handling, or treatment, no wastes shall be placed in a position where they can be carried into the waters of the State.

2. Clean water shall be used during disposal operations and shall be limited to a minimal amount necessary for dust suppression, waste compaction, and fire control.

3. The site shall be protected from any washout or erosion of wastes or covering material and from inundation which could occur as a result of a 100 year, 24 hour precipitation event.

4. The wastes to be contained within the unit shall be dried and compacted to at least 90 percent of dry density.

5. Surface drainage from tributary areas, and internal site drainage from surface and subsurface sources, shall not contact or percolate through wastes during disposal operations or during the life of the site. Surface drainage shall be controlled to ensure that all rainwater is diverted away from the disposal area, such that it does not contact waste or leachate.

6. The Discharger shall design, install, and operate a Leachate Collection and Removal System, acceptable to the Executive Officer, for the landfill so as to prevent the build-up of leachate in the landfill. The system shall be inspected at least monthly, and any accumulated fluid shall be removed.

   Measures shall be taken to ensure that leachate in the Leachate Collection and Removal System can flow freely into any collection sump. Measures shall also be taken to assure that the Leachate Collection and Removal System will remain operational throughout the closure/post-closure maintenance period of the landfill.

7. A program shall be implemented as approved by the Executive Officer to ensure that hazardous wastes are not discharged at the landfill and that the wastes discharged thereto shall be in accordance with Section 2522 of Chapter 15. For this purpose, the criteria listed below shall be followed:

   - For the inorganics of concern listed under Section 66699 of Title 22, none shall exceed the Total Threshold Concentration (TTLC) or Soluble Threshold Concentration (STLC) criteria described.

   - For the petroleum contaminated soils, none of the organic constituents shall exceed their regulatory levels established under the Toxicity Characteristic Leaching Procedure (TCLP).

8. For the oily contaminated soils a program shall be implemented as approved by the Executive Officer to address leachability and mobility characteristics of TPH constituents. For the interim, discharge of any soils with TPH concentrations exceeding 1000 mg/kg is prohibited.

9. The Discharger shall ensure that the foundations of the landfills, and the structures which control leachate, surface drainage, erosion, and gas migration for this site, are constructed and maintained to withstand or enable repair from conditions generated during a maximum credible earthquake event at the San Andreas and Hayward fault Zones.

10. As portions of the landfill are closed, the exterior surfaces shall be graded to promote lateral runoff of precipitation. The final cover for the landfill will consist of a compacted foundation layer and, as an engineering alternative, ten inches of compacted aggregate overlain by a three inch layer of asphaltic concrete with an internal layer of geotextile. The slope of the cover shall be 5%.

11. The groundwater sampling and analysis program shall ensure that groundwater quality data are representative of the groundwater in the

area of the waste management unit and comply with Section 2550.7 (a) and (b) of Article 5.

12. An evaluation monitoring program, as required in Sections 2550.1, 2550.7(b), and 2550.9 shall be implemented where water quality impairment has occurred, or upon determination that a statistically significant increase in indicator parameters or waste constituents has occurred during detection monitoring.

13. The Discharger shall operate the waste management facility so as not to cause a statistically significant difference to exist between water quality at the compliance points and the Water Quality Protection Standards (WQPS) to be established. The Discharger shall establish WQPS according to the requirements of this Order and Article 5 of Chapter 15 for, at a minimum, the parameters established for the Discharger's Groundwater Assessment Program and Part B RCRA Application. The WQPS shall take into account the existing levels of contamination in groundwater associated with other waste management units at the facility which are currently undergoing corrective action. In addition, because of the petroleum contaminated soils to be contained within the unit, the Discharger shall establish WQPS for the following minimum parameters:

    Total Petroleum Hydrocarbons as gasoline;
    Total Petroleum Hydrocarbons as diesel;
    Total Petroleum Hydrocarbons as kerosene, and;
    Total Oil and Grease.

14. The concentrations of the indicator parameters or waste constituent in waters passing through Points of Compliance shall not exceed the WQPS established by Provision 5 of this Order.

15. The Discharger shall install any additional groundwater and leachate monitoring devices required to fulfill the terms of this Order.

16. Designated wastes as specified may be disposed of provided that all regulations and provisions of the California Integrated Waste Management Board, California Department of Health Services, local health agencies, and County Land Use Permit requirements are complied with.

17. The landfill shall be designed and constructed in conformance to Chapter 15, as approved by the Executive Officer. The final as-built construction report shall include, but not be limited to, "as built" drawings for the waste management unit, a QA/QC report with a written summary of the QA/QC program and all test results and analyses, and a certification as described in Provision 7.

18. As per the approved construction design the landfill shall have a blanket type Leachate Collection and Recovery System immediately above the natural clay liner, designed and operated to collect and remove any groundwater along with any leachate that is generated.

19. All reports submitted pursuant to this Order shall be prepared under the supervision of a registered civil engineer, a California registered geologist, or certified engineering geologist.

20. This Board considers the property owner and site operator to have continuing responsibility for correcting any problems which arise in the future as a result of this waste discharge or related operations.

21. The Discharger shall maintain all devices or designed features, installed in accordance with this Order such that they continue to operate as intended without interruption except as a result of failures which could not have been reasonably foreseen or prevented by the Discharger.

C. PROVISIONS

1. The Discharger shall comply with all Prohibitions, Specifications, and Provisions of this Order immediately upon adoption of this Order.

2. All submittal of hydrogeological plans, specifications, reports, and documents (except progress and self-monitoring reports), shall be signed by and stamped with the seal of a registered geologist, registered engineering geologist, or registered professional engineer as specified by Chapter 15.

3. The Discharger shall submit a plan to be implemented upon approval for monitoring deformations due to settlement of the waste.

   REPORT DUE DATE: December 31, 1991

4. The Discharger shall submit a detailed Post Earthquake Inspection and Corrective Action Plan to be implemented in the event of any earthquake generating ground shaking of Modified Mercalli Intensity V or greater at or near the landfill. The report shall describe the containment features, and ground water monitoring and leachate control facilities potentially impacted by the static and seismic deformations of the landfill. The plan shall provide for reporting the results of the post-earthquake inspection to the Board within five working days of the occurrence of the earthquake. Immediately after an earthquake event causing damage to the landfill structures, the corrective action plan shall be implemented

and this Board shall be notified of any damage.

REPORT DUE DATE: April 30, 1992

5. The Discharger shall submit in accordance with the requirements of Article 5 of Chapter 15 a report on the groundwater quality at the site that identifies the background concentrations and Water Quality Protection Standards (WQPS) for the constituents determined as stated in Specification B.12 of this Order.

REPORT DUE DATE: December 31, 1991

6. The Discharger shall submit a detailed Leachate Management Plan for the landfill. This plan shall estimate the quantity of leachate and groundwater produced, the storage of this combined water stream (if storage facilities are utilized), and the ultimate disposition of this fluid. The report should evaluate the quantity of leachate and groundwater produced from the unit and determine the maximum safe operating level for the leachate / groundwater containment facilities (if storage facilities are utilized). In addition, the plan shall provide for an emergency leachate / groundwater containment capacity of 150% of the primary containment facility (if storage facilities are utilized).

REPORT DUE DATE: December 31, 1991

7. The Discharger shall submit an As-Built Design Report acceptable to the Executive Officer. The report should address the construction of the various components of the landfill, including detailed specifications for construction of composite liners and the leachate collection and removal system, including the Quality Assurance and Quality Control Procedures (QA/QC), for all aspects of construction and installation. In addition, all data of bench test investigations for the water treatment plant (if treatment is necessary) together with data on selection of the final disposition method selected shall be included. The containment structure shall have been designed and constructed under the supervision of a California registered civil engineer or a certified engineering geologist. The report shall be signed and stamped with the seal of that individual as meeting the prescriptive standards and performance goals of Chapter 15.

REPORT DUE DATE: December 31, 1991

8. The Discharger shall submit to the Board, a closure and post-closure maintenance plan pursuant to Title 23, CCR, Chapter 15, Article 9, Section 2597.

REPORT DUE DATE: December 31, 1992

9. Pursuant to Article 5, Section 2556 of Chapter 15, the Discharger shall continue the present groundwater and surface water monitoring program to detect any lateral or vertical contamination of groundwater at the site. If groundwater contamination or potential contamination is detected, the Discharger shall give immediate notification to the San Francisco Bay Regional Water Quality Control Board, the Local Enforcement Agency , and the Department of Toxic Substances Control - Cal EPA. The Discharger shall initiate its corrective action plan to stop and contain the migration of pollutants from the landfill.

10. The Discharger shall file with the Regional Board the Self-Monitoring reports performed according to any Self Monitoring Program (SMP), issued by the Executive Officer.

11. The Discharger shall submit a technical report, within 1 year after completion of the slurry wall and groundwater extraction system, evaluating the effectiveness of the hydraulic containment system. Such an evaluation shall include, but need not be limited to, an estimation of the flow capture zones of the extraction wells/trenches, establishment of the cones of depression by field measurements, and presentation of chemical monitoring data.

12. All samples shall be analyzed by State certified laboratories using appropriate EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.

13. Copies of all correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications and Provisions of this Order shall be provided to the following agencies:

    a. Regional Water Quality Control Board, San Francisco Bay Region, Land Disposal Division

    b. Cal-EPA, Department of Toxic Substances Control (formerly Department of Health Services, Toxic Substances Control Division)

    c. Contra Costa County Health Department

14. The discharger shall permit the Board or its authorized representative, in accordance to Section 13267 (c) of the California Water Code:

    a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any records are kept, which are relevant to this Order.

    b. Access to copy any records required to be kept under the terms and conditions of this Order.

    c. Inspection of any treatment equipment, monitoring equipment or methodology implemented in response to this Order.

    d. Sampling of any groundwater, soil, or waste which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

15. The Discharger shall file with the Regional Board a report of any material change in the character, location, or quantity of waste discharge. For the purpose of these requirements, this includes any proposed change in boundaries, contours or ownership.

    If any hazardous substance is discharged in or on any waters of the State, or discharged and deposited, or probably will be discharged in or on any waters of the State, the Discharger shall report such discharge to the following:

    a. This Regional Board at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m.; and,

    b. The Office of Emergency Services at (800) 852-7550.

    A written report shall be filed with the Regional Board within five working days and shall contain information relative to the following:

    a. The nature of waste or pollutant;
    b. The quantity involved and the duration of the incident;
    c. The cause of spill;
    d. The estimated size of the affected area;
    e. The corrective measures that have been taken or planned, and a schedule of these measures; and,
    f. The persons/agencies notified.

16. The discharger shall maintain a copy of this Order at the site so as to be available at all times to site operating personnel.

17. The Board considers the property owner and site operator to have a continuing responsibility for correcting any problems within their reasonable control which arise in the future as a result of this Waste Discharge Order.

18. The Discharger shall immediately notify the Board of any flooding, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.

19. These requirements do not authorize the commission of any act causing injury to the property of another or of the public, do not convey any property rights, do not remove liability under federal, state or local laws, and do not authorize discharge of waste without the appropriate federal, state or local permits, authorizations, or determinations.

20. The Board may review and update this Order periodically, as necessary, in order to comply with changing State or federal laws, regulations, policies, or guidelines; changes in the Board's Basin Plan; or changes in the discharge characteristics.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on October 16, 1991.

STEVEN R. RITCHIE
Executive Officer

Attachments

Figure 1: Location Map
Figure 2: Proposed Waste Management Unit
Figure 3: Slurry Wall and Extraction Trench System

ATTACHMENTS

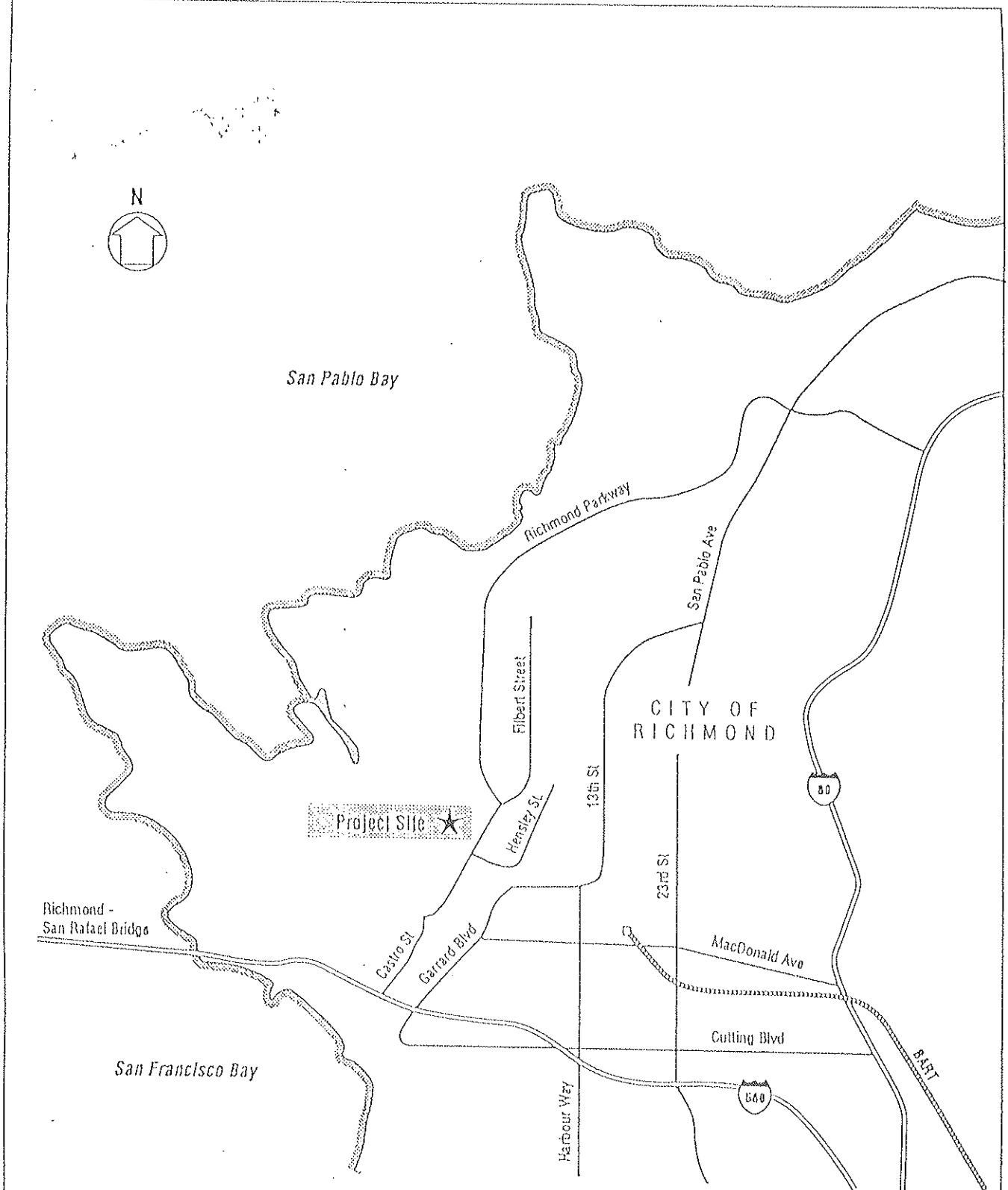
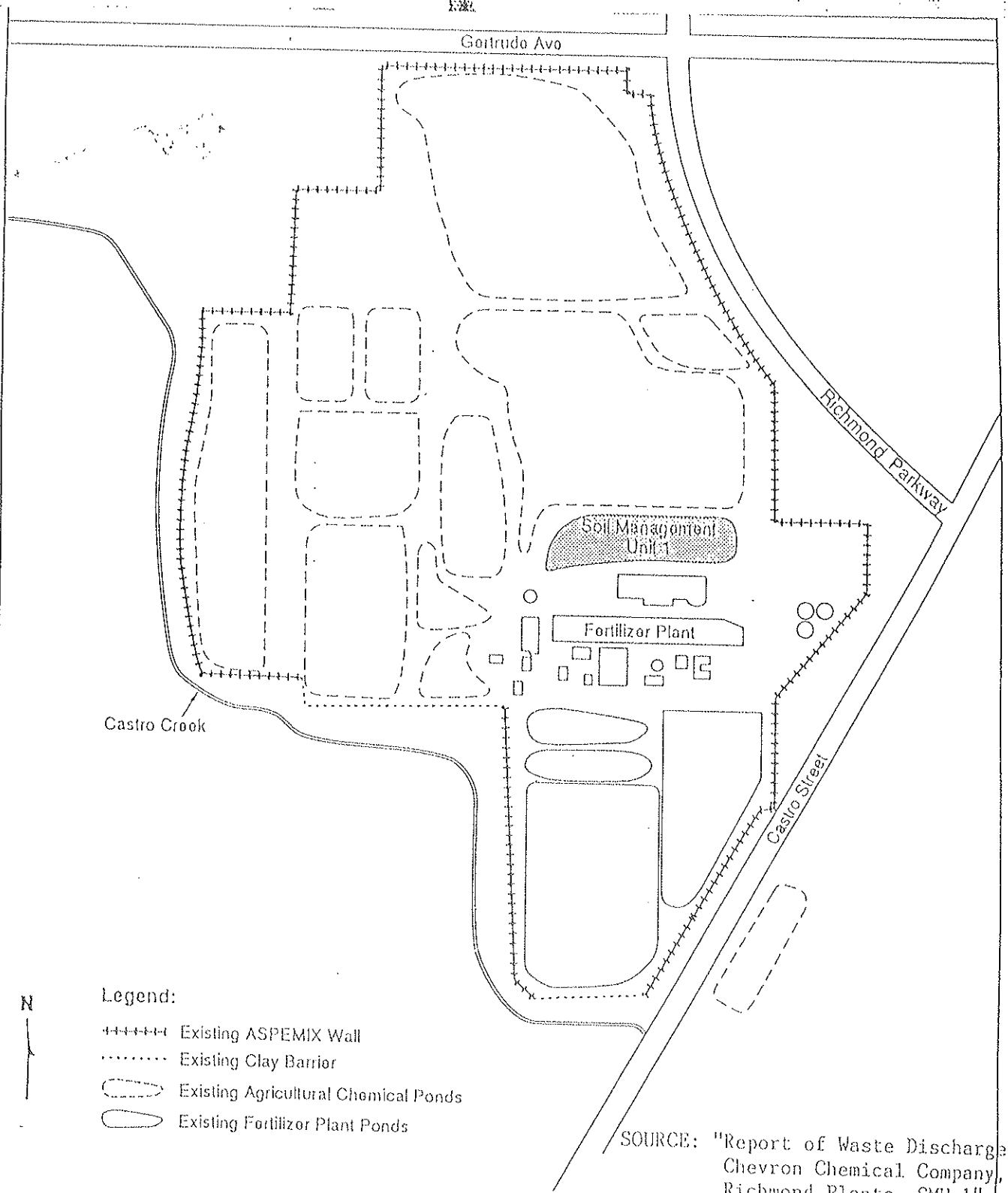


FIGURE 1

LOCATION MAP

SOURCE: " Report of Waste Discharge for Chevron Chemical Company, Richmond Plants, SMU 1", January 1991

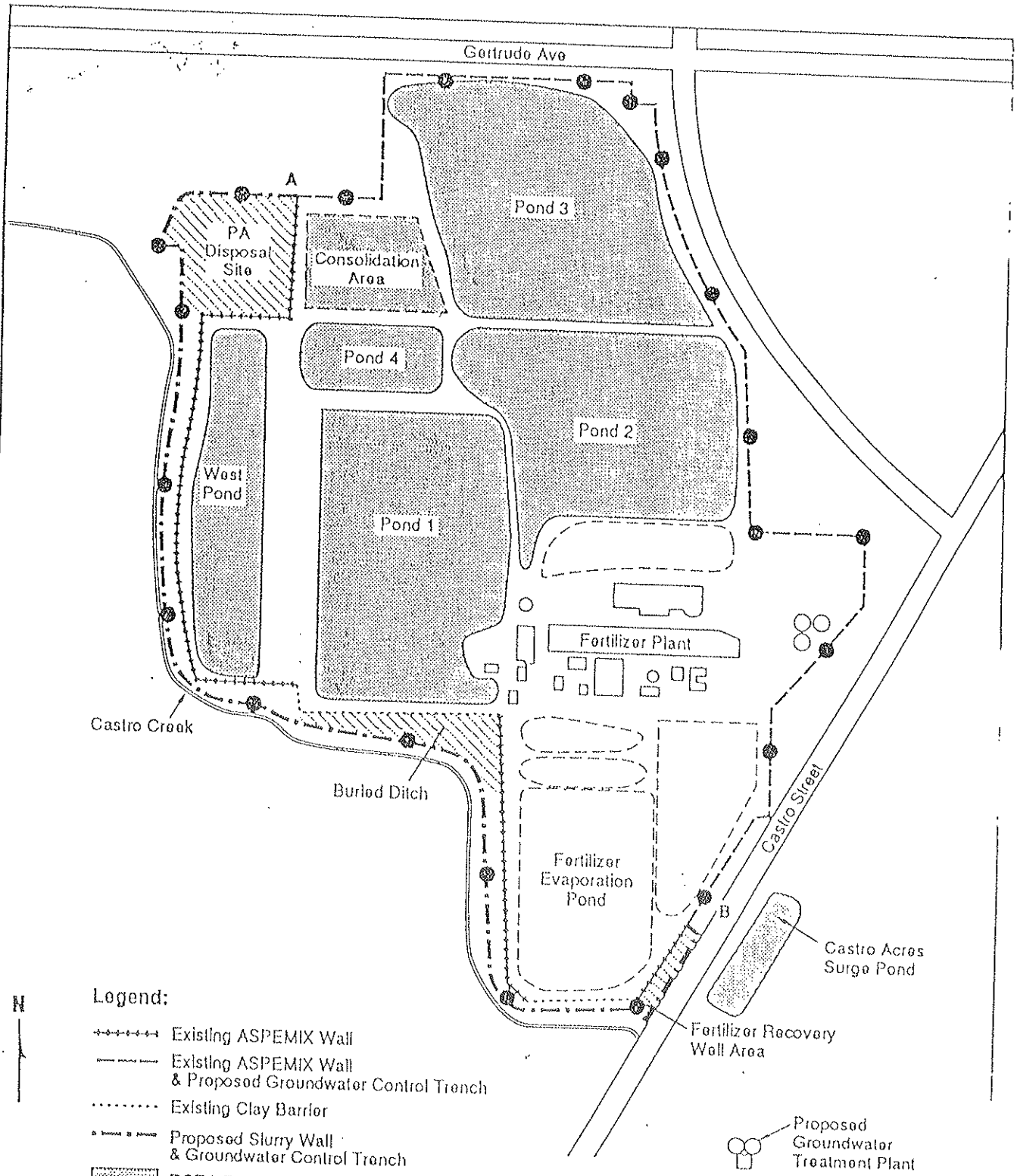


SOURCE: "Report of Waste Discharge, Chevron Chemical Company, Richmond Plants, SMU 1", January 1991.

FIGURE 2

PROPOSED WASTE MANAGEMENT UNIT

19161/14/d/Chevron/246b
1-17-91 rAk :10



SOURCE: "Pond Closure Plan", Chevron Chemical, November 1990.

SLURRY WALL AND EXTRACTION TRENCH SYSTEM

BECHTEL SAN FRANCISCO			
CHEVRON-RICHMOND			
PERIMETER SUMPS LINED PONDS SYSTEM			
	JOB NO.	DRAWING NO.	REV
	19261	FIGURE 3	

19161/2a/d/Chevron246